DIGITAL PRE-DISTORTION FOR THE LINEARIZATION OF
POWER AMPLIFIERS WITH ASYMMETRICAL CHARACTERISTICS

ABSTRACT OF THE DISCLOSURE

5   An input signal is pre-distorted to reduce spurious emissions resulting from subsequent signal amplification. Frequency-dependent pre-distortion is preferably implemented in combination with frequency-independent pre-distortion, where the frequency-dependent pre-distortion corresponds to amplifier distortion that has a magnitude that is proportional to the frequency offset from the carrier frequency and a ±90° phase shift on either side of the carrier frequency. The frequency-dependent pre-

10   distortion is generated by differentiating waveforms corresponding to two different sets of pre-distortion parameters with respect to time. In one embodiment, one of the differentiated waveforms is applied to a positive-frequency filter and the other to a negative-frequency filter to generate positive- and negative-frequency pre-distortion signals, respectively, to account for asymmetries in the amplifier characteristics. In another embodiment, only one of the differentiated waveforms is applied to an asymmetric filter (i.e.,

15   either a positive-frequency filter or a negative-frequency filter).